

CLAIM AMENDMENTS

1 - 12. (canceled)

1 13. (new) An apparatus for measuring the chromatic
2 dispersion of an optical fiber having first and second opposite
3 ends, the apparatus comprising:

4 an optical source able to generate optical signals at a
5 variable wavelength;

6 a signal generator able to generate modulation signals;

7 a modulator able to generate modulated signals on the
8 basis of the optical signals and of the modulation signals;

9 a coupling device able to send the modulated signals to
10 the first end of the fiber;

11 an impulse generator in the signal generator and able to
12 generate impulsive electrical signals having variable amplitude and
13 having duration and periodicity determined according to
14 characteristics of the fiber such that the modulated signals are
15 shaped by pulses having variable amplitude;

16 a reflecting element at the second end of the fiber able
17 to reflect the modulated signals and to generate reflected optical
18 signals having a reflected modulated component; and

19 a comparator associated with the first end of the fiber
20 and able to measure a phase difference between the modulation
21 signals and the reflected modulated component.

1 14. (new) The apparatus defined in claim 13 wherein the
2 coupling device is further able to receive the reflected optical
3 signals and the comparator comprises

4 an optical receiver connected to the coupling device and
5 able to convert the reflected optical signals
6 into electrical signals representative of the
7 reflected modulated component; and
8 a phase comparator connected to the signal generator and
9 to the optical receiver and able to generate an
10 electrical signal representative of the phase
11 difference.

1 15. (new) The apparatus defined in claim 14 further
2 comprising

3 a processor associated with the optical source and with
4 the signal generator and able selectively to control the wavelength
5 of the optical signals and the characteristics of the modulation
6 signals.

1 16. (new) The apparatus defined in claim 15 wherein the
2 processor is further able to calculate the chromatic dispersion of
3 the optical fiber on the basis of the phase difference measured as
4 the wavelength of the optical signal varies.

1 17. (new) A method for measuring the chromatic dispersion
2 of an optical fiber having first and second opposite ends, the
3 method comprising the steps of:

4 generating optical signals at variable wavelength;
5 generating modulation signals shaped by impulse
6 electrical signals having predetermined phase, variable amplitude,
7 and duration and periodicity determined according to
8 characteristics of the fiber;

9 modulating the optical signals with the modulation
10 signals such that the optical signals modulated with the modulation
11 signals are shaped by pulses having variable amplitude;

12 sending the modulated signals to the first end of the
13 fiber;

14 reflecting at the second end of the fiber the modulated
15 signals in such a way as to obtain reflected optical signals having
16 a reflected modulated component;

17 measuring at the first end a phase difference between the
18 modulation signal and the reflected modulated component.

1 18. (new) The method as claimed in claim 17 further
2 comprisign the step of

3 calculating a chromatic dispersion of the optical fiber
4 on the basis of a phase difference measured as a wavelength of the
5 optical signals varies.

1 19. (new) The method defined in claim 17 wherein an
2 amplitude of the pulses is variable in sinusoidal fashion.

1 20. (new) The method defined in claim 17 wherein a
2 duration of the pulses is no greater than twice a time of
3 propagation of the pulses in the fiber.

1 21. (new) The method defined in claim 17 wherein a
2 periodicity of the pulses is no less than four times a time of
3 propagation of the pulses in the fiber.

1 22. (new) The apparatus defined in claim 13 wherein the
2 amplitude of the pulses is variable in sinusoidal fashion.

1 23. (new) The apparatus defined in claim 13 wherein a
2 duration of the pulses is no greater than twice a time of
3 propagation of the pulses in the fiber.

1 24. (new) The apparatus defined in claim 13 wherein a
2 periodicity of the pulses is no less than four times a time of
3 propagation of the pulses in the fiber.